

NASA TECH BRIEF

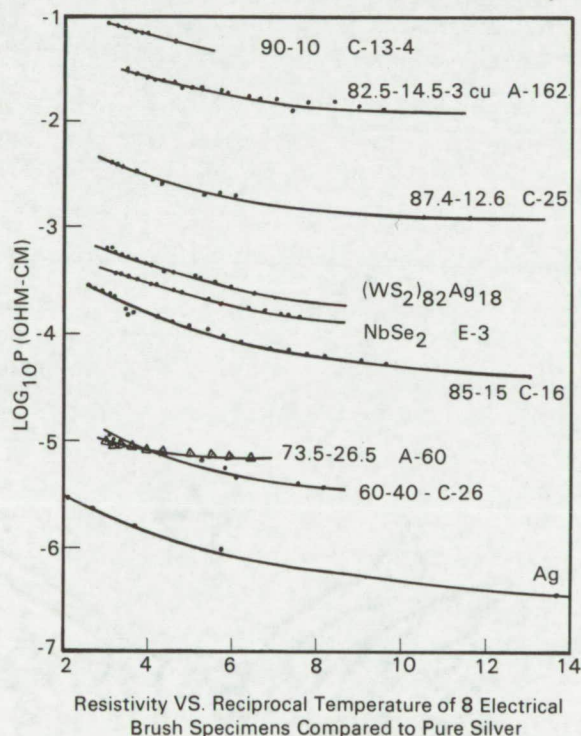
Marshall Space Flight Center



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Resistivity and Hall Measurements of Thermoelectric Materials

Resistivity and Hall measurements were made on eight semiconductor specimens being developed for possible use as electrical brushes. Standard Hall instrumentation was assembled and overall system



calibration was achieved using a specimen with known properties.

The results of the resistivity measurement, shown in the figure, indicate metallic conduction, i.e., an increase of resistivity with increasing temperature. The

resistivity of pure silver is shown for comparative purposes. A general conclusion drawn from the experimental data indicates that, when the silver content in the molybdenum disulfide is reduced, the resistivity increases. Noted exceptions, although not fully explainable, might have been caused by heat treatments in the prior fabrication process.

This instrumentation setup can be used for measuring resistivity values between 3×10^{-6} and 10^5 ohm-cm and Hall values between 0.2 and 10^{10} cm³/coulomb, with an absolute error of less than 5 percent.

An elementary review of the Hall theory is presented with the calibration data.

Note:

The following documentation may be obtained from:

National Technical Information Service
Springfield, Virginia 22151
Single document price \$3.00
(or microfiche \$0.95)

Reference:

NASA-TM-X-53763 (N68-33020), Determination of Resistivity and Hall Coefficient of Semiconducting Materials Between 80°K and 375°K

Patent status:

No patent action is contemplated by NASA.

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(MFS-20470)

Category 03

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Abstracted from the NASA Technical Reports Library



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Experiments and Hall Measurements of the Solar Wind

The solar wind is a stream of charged particles (mostly protons and electrons) that flows out from the Sun in all directions. It is a plasma, and its behavior is governed by the laws of plasma physics. The solar wind is a complex phenomenon, and its study is a major area of research in space science. The solar wind is a stream of charged particles (mostly protons and electrons) that flows out from the Sun in all directions. It is a plasma, and its behavior is governed by the laws of plasma physics. The solar wind is a complex phenomenon, and its study is a major area of research in space science.

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The graph shows the relationship between the distance from the Sun and the speed of the solar wind. The x-axis represents the distance from the Sun in Astronomical Units (AU), ranging from 0 to 10. The y-axis represents the speed of the solar wind in kilometers per second (km/s), ranging from 0 to 800. The data points (open circles) show a general trend of increasing speed with distance, with some scatter. The theoretical curves (solid lines) provide a model for the solar wind's behavior, showing that the speed increases as the distance from the Sun increases. The curves are labeled with different parameters, such as "Theoretical curve for $\alpha = 1$ " and "Theoretical curve for $\alpha = 2$ ".